



Docket No.: UTSD:1276USC1

Serial No.: 09/686,346

Inventor(s): Cobb et al.

Title: "TAO Protein Kinase Polypeptides and Methods of Use Thereof"

1 TCTGCAGTATGGTAGATTATTATTTATGCATTATGCCAGTGTGGCTTCATTACACAGATGAACCAAGCTTTGGGATAGCAGTATAAAATTAGAAATCAGACAGCTGACTGCTC
115 AGCAGGATGCCATCAACTAACAGAGCAGGAGCTTAAAGGACCCCTGAAATCGCAGAGCTCTCTTCAAGAAGATCCGGAAGAACTCTTACAGATCTCAGAGAAATCGGCCAT
M P S T N R A G S L K D P E I A E L F F K E D P E K L F T D L R E I G H 36

229 GGGAGCTTTGGAGCAGTTTATTTTGCACGAGATGTGCTACTAATGAAGTGGTGGCCATCAAGAAAATGCTTATAGTGAAGCAGTCTACTGAGAAATGGCAGGATATTATT
G S F G A V Y F A R D V R T N E V V A I K K M S Y S G K O S T E K W Q D I I 74

343 AAGGAAGTCAAGTTTCTACAAAGAATAAAACATCCCAACAGTATAGATACAAGGCTGCTATTTACGTGAACACACAGCATGGCTTGTAATGGAATATTGTTAGGATCTGCT
K E V K F L Q R I K H P N S I E Y K G C Y L R E H T A W L V M E Y C L G S A 112

457 TCGATTACTAGAGTTTCAAAAAGCCATTACAAGAGTGAATAGCAGCAATTACACATGGTGTCTCCAGGATTAGCTTATTTACATTCTCATACCATGATCCATAGA
S D L L E V H K K P L Q E V E I A A I T H G A L O G L A Y L H S H T M I H R 150

571 GATATCAAGCAGGAAATATCCTTCTGACAGAACCGGCAAGTGAACCTTGCTGACTTTGGATCTGCTCCATGGCTCCCTGCCAATCTTTTGTGGGAACCATATTGG
D I K A G N I L L T E P G Q V K L A D F G S A S M A S P A N S F V G T P Y W 188

685 ATGGCCCCAGAAGTAATTTTAGCCATGGATGAAGGCAATATGATGGCAAGTTGATGTATGCTCTTGAATAACATGATTGAATTAGCCGAGAGGAGGCTCCTTTATTT
M A P E V I L A M D E G Q Y D G K V D V W S L G I T C I E L A E R K P P L F 226

799 AATATGAATGCAATGAGTGCCTTATACATAGCCCAAAATGAATCCCTACACTACAGTCTAATGAATGGTCTGATTATTTTCSAACTTTGTAGATTCTTGCTCCAGAAA
N M N A M S A L Y H I A Q N E S P T L Q S N E W S D Y F R N F V D S C L Q K 264

913 ATCCCTCAAGATCGCCCTACATCAGAGGAACCTTTTAAAGCAGTGTGTTCTTCGAGAGCGCCCTGAAACAGTGTTAATAGATCTTATTCAAGGACAAGGATGCAGTAAGA
I P Q D R P T S E E L L K H M F V L R E R P E T V L I D L I Q R T K D A V R 302

1027 GAGCTGGACAATCTACAATATCGAAAGATGAAGAACTCTTTTCCAGAGGCACATAATGGACCAGCAGTAGAAGCACAGGAAGAAGAGGAGGAGCAAGATCATGGTGGTGGC
E L D N L Q Y R K M K K L L F Q E A H N G P A V E A Q E E E E E Q D H G G G 340

1141 CGGACAGGAACAGTAAATAGTGTGGAAGCAATCAGTCTATCCCAGTATGTCTATCAGTGGCAGTAGCCAAAGCAGCAGTGTTAATAGTCTTCCAGATGCATCGGATGACAAG
R T G T V N S V G S N Q S I P S M S I S A S S Q S S S V N S L P D A S D D K 378

1255 AGTGAGCTAGACATGATGAGGGAGACCATACAGTGATGTCTAACAGTTCTGTCTCCACTTAAACCTGAGGAGGAAAATTACCAAGAAGAAGGAGATCTTAGAACAGAGCA
S E L D M M E G D H T V M S N S S V I H L K P E E E N Y Q E E G D P R T R A 416

1368 TCAGTCCACAGTCTCCACCTCAAGTGTCTGTCACAAATCATTATCGTAATAGAGAACACTTTGCAACTATACGAACAGCATCACTGGTTACAAGACAGATGCAAGAACAT
S A P Q S P P Q V S R H K S H Y R N R E H F A T I R T A S L V T R Q M Q E H 454

1483 GAGCAGGACTCTGAACCTAGAGAACAGATGTCTGTTATAAGCGGATGAGGCGACAGCATCAGAAGCAGCTGATGACTCTGGAATAAATGAAGGCAAGAAATGGACGAACAT
E Q D S E L R E Q M S G Y K R M R R Q H Q K Q L M T L E N K L K A E M D E H 492

1597 CGGCTCAGATTAGACAAAGATCTTGAACCTCAGCGCAACAATTCGCTGCAGAAATGGAGAACTTATTAAGAAACCAACGCTTCTATGAAAAAGAGGCTAAAGTATGGCC
R L R L D K D L E T O R N N F A A E M E K L I K K H O A S M E K E A K V M A 530

FIG. 1



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1711 AACGAGGAGAAAAATTCACACACATTCAAGGCTCAACAGAGAAAGAACTGAATAGCTTTTGGAGTCTCAAAAAGAGAAATATAAATTCGAAAAGAGCAGCTTAAGGAG
N E E K K F Q Q H I Q A Q Q K K E L N S F L E S Q K R E Y K L R K E Q L K E 568

1825 GAGCTGAATGAAAACAGAGCACACCTAAAAAGAAAAGCAGGAATGGCTTTCAAGCAGAGGAGAATATTCAACATTTTCAGGCAGAGAGAGCTAATCTTTCGACGT
E L N E N Q S T P K K E K Q E W L S K O K E N I O H F Q A E E E A N L L R R 606

1939 CAAAGGAGTATCTAGAGTAGAATGTCGTGCTTCAAAAGAGAATGTTACTTGGTCGGCATACTTGAACAGGACCTTGTGAGGAGGAGTTAAACAAAAGGAGCAGCTCAG
Q R Q Y L E L E C R R F K R R M L L G R H N L E Q D L V R E E L N K R Q T Q 644

2053 AAGGACTAGAACATGCAATGTTACTGCGACAGCATGAATCCATGCAAGAACTGGAGTTTGGCCACCTCAACACTATTGAGAGATGCGCTGTGAGTTGATCAGACTGCAACAT
K D L E H A M L L R Q H E S M Q E L E F R H L N T I Q K M R C E L I R L Q H 682

2167 CAACTGAGCTTACTAACCAGCTGGAATACAATAAGAGAGGGAACGGGAAGTAAAGCGAAACATGTGATGGAAGTTCCAGCAGCAGCTTAAGAGTTTGAAGTCTAAAGAACTC
Q T E L T N Q L E Y N K R R E R E L R R K H V M E V R Q Q P K S L K S K E L 720

2281 CAAATAAAAAGCAGTTTCAGGATACCTGCAAAATTCAAACAGAGAGTACAAAGCATTAAAGGAATCACCTACTGGAGACTACACCAAGAGTGAGCACAAGCTGTTCTGAAA
Q I K K Q F O D T C K I Q T R Q Y K A L R N H L L E T T P K S E H K A V L K 758

2395 AGACTCAAGGAGGAACAGACTCGGAAGTTAGCCATCTTGGCTGAGCAGTATGATCATAGCATTAAATGAATGCTCTCCACACAAGCTCTGCGTTTGGATGAAGCAGAGGAACA
R L K E E Q T R K L A I L A E Q Y D H S I N E M L S T Q A L R L D E A O E A 796

2509 GAATGCCAGGTTTTGAAGATGCAGCTACAGCAGGAAGTGAAGCTGTTGAATGCATATCAGAGCAAAATCAAGATGCAGGCTGAGGCCAACATGATCGAGAGCTTCGAGAGCTG
E C Q V L K M Q L Q Q E L E L L N A Y Q S K I K M Q A E A Q H D R E L R E L 834

2623 GAACAAAGGGTCTCCCTTCGGAGAGCAGCTTAGAACAGAGATTGAAGAGAGATGTTGGCTTTGAGAGTGAACGACAGAGCAAGTACGTAGCCTGCTGAGGCCAGGCC
E Q R V S L R R A L L E Q K I E E E M L A L Q N E R T E R I R S L L E R O A 872

2737 AGAGAAATTGAAGCTTTTGACTCTGAAGCATGAGATTAGGTTTTAGTAACATGGTCTTTCTAATCTCTCCCTGAGGCATTGAGCCACAGCTACCCAGGAGCTTCTAGCTGG
R E I E A F D S E S M R L G F S N M V L S N L S P E A F S H S Y P G A S S W 910

2851 TCTCACAATCCTACTGGGGGTTCAAGCAGCTCACTGGGTCATCCATGGGTGGCACACCACAAGCTTGGGGTCATCCGATGCAAGGCGGACCCCAACCATGGGGTCACCCCTCA
S H N P T G G S G P H W G H P M G G T P Q A W G H P M Q G G P Q P W G H P S 948

2965 GGGCCAATGCAAGGGGTACCTCGAGGTAGCAGTATAGGAGTCCGCAATAGCCCCAGGCTCTGAGGGGACAGCTTCTGGGGACGGAGCGAAGCAGGGCATGAGCAGAGCAGC
G P M Q G V P R G S S I G V R N S P Q A L R R T A S G G R T E Q G M S R S T 986

3079 AGTGTCACTTCACAAATATCCAATGGGTACACATGTCTTACACATAATAATTGAAGTGGAATTCGCTGAGAGTGTCTGCCAAAAGAAATGCCTACAGACATCAGCAGACG
S V T S Q I S N G S H M S Y T * * 1001

3193 CAGCCTCCTCACTTGGGTACTACGGGTGAAGCTGTGCATATGGTATATTTTATTCGTCTTTGTAAGCGTTATGTTTGTGTTTACTAATTGGGATGTCATAGTATTTGGCTG

FIG.1 Cont.



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	I	II	III
TA01	MPSTNRAGSLKQPEIAELFFKEDPEKLFDTLREIGHGSGFAGVYFARDVRTNEVAIKKMSYSGKQSTEKW--QDIKEV	77	
TA02	MPAGGRAGSLKQPDVAELFFKDDPEKLFESDLREIGHGSGFAGVYFARDVRNSEVAIKKMSYSGKQSNKQW--QDIKEV	77	
ceTOA	-MAPAVLQKPGVVKDPSTAAALFSNKKDPEQDLREIGHGSGFAGVYFAYDKKNEQTVAIKKMNFSGKQAVEKW--NDIIEV	76	
STE20	REERERRKKQLYAKLNEICSDGDPSTKYANLVKIGQASGGVYTAVEICTNVSVAIKQMNLE-KQPKKELIINEILVMK	670	

	IV	V	VI
TA01	KFLQRIKHPNSIEYKGCYLREHTAHLVMEYCLGSASDLLEVHKKPLQVEVEIAAITHGALQGLAYLHSHMTMIHRDIKAGN	156	
TA02	RFLOKLRHPNTIQYRGCVLREHTAHLVMEYCLGSASEFLEVHKKPLQVEVEIAAVTHGALQGLAYLHSHNMIIHRDVKAGN	156	
ceTOA	SFLNTVVHPHIVDYKACELKDTTCWLMEYCLGSAADIVDLRKGMRVEVEIAAICSQTLDAIRYLHSLKRIHRDIKAGN	155	
STE20	G----SKHPNIVNFIDSIVLKGDLWVMEYMEGFSLTDV-VTHCILTEGQICAVCRETLSGLEFLHSGVLRDIKSDN	744	

	VII	VIII	IX
TA01	ILLTEPGQVKLADFGSAS----MASPANSFVGTPYVMAPEVILAMDEGOYDGKVDVWSLIGITCIELAERKPPLEFMNA	230	
TA02	ILLSEPGLVKLDFGSAS----INAPANSFVGTPYVMAPEVILAMDEGOYDGKVDVWSLIGITCIELADRKPPLEFMNA	230	
ceTOA	ILLSOHAIVKLADFGSAS----LVDPAQTFIGTPTFMAPEVILAMDEGHYTDRAIDWSLIGITCIELAERRPPLEFSMNA	229	
STE20	ILLSMEGDIKLTDFGFCQINELNLKRTTMVGTPTVMAPEVVSRRKE----YGPKVDIWSLIGITMIEMIEGEPYLNETP	819	

	X	XI
TA01	MSALYHTAQNESPTLQSNWSDYFRN-----FVDSCLQKIPQDRPTSE	273
TA02	MSALYHTAQNESPALQSCHWSEYFRN-----FVDSCLQKIPQDRPTSE	273
ceTOA	MSALYHTAQNDPTLSPIDTSEQPEWSLEFVQFIDKCLRKPAEERMSAE	279
STE20	LRALYLIATNGTPKLKEPENISS----SLKK--FLDWCLCPEPEDRASAT	863

FIG.2



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Title: "TAO Protein Kinase Polypeptides and Methods of Use Therefor"

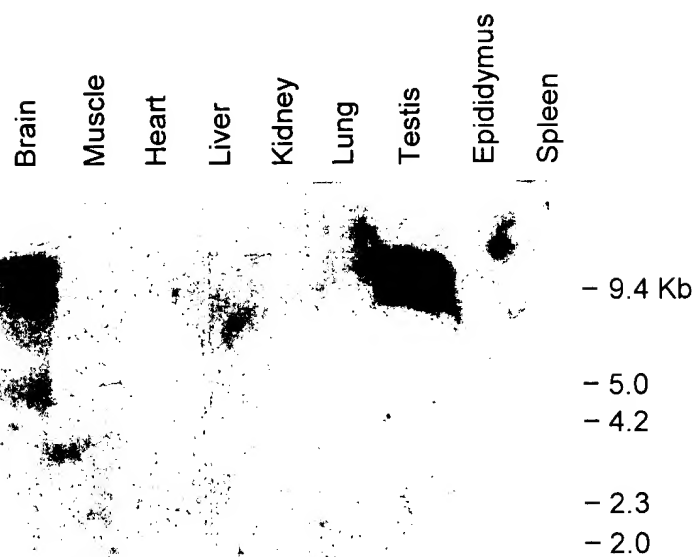


FIG.3A

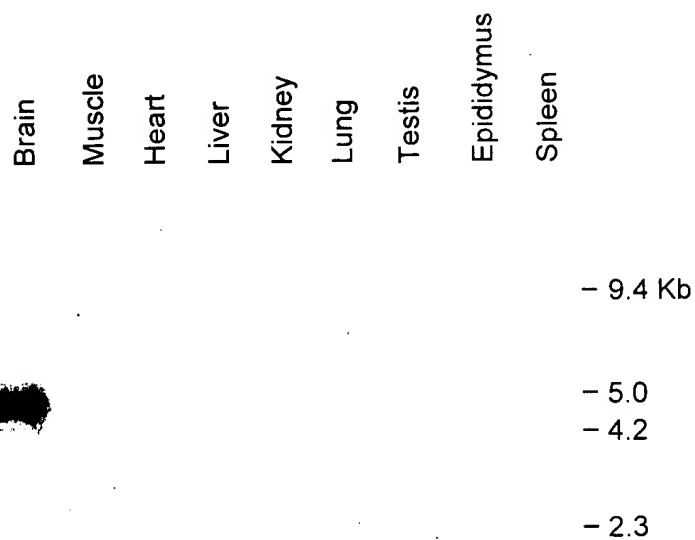


FIG.3B



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Inventor(s): Cobb et al.

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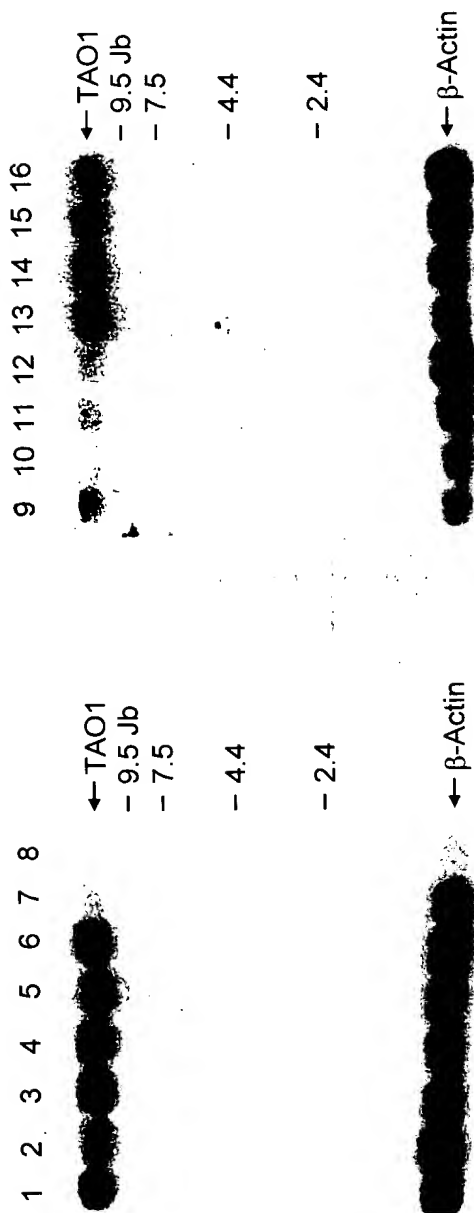


FIG.4B

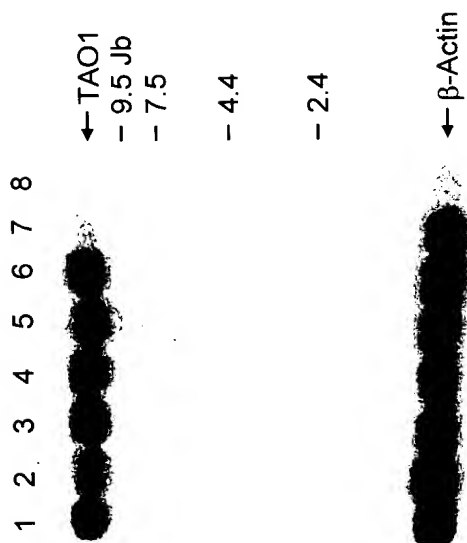


FIG.4A



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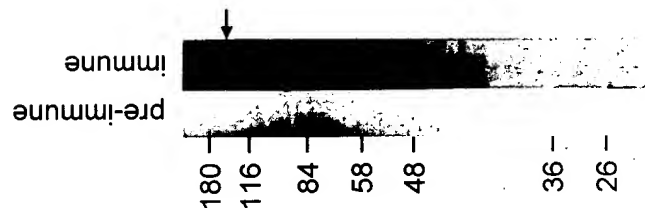


FIG. 5C

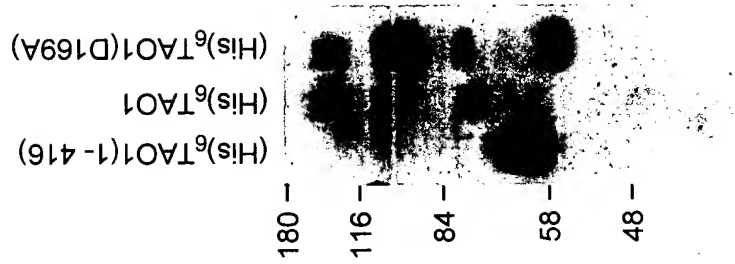


FIG. 5B

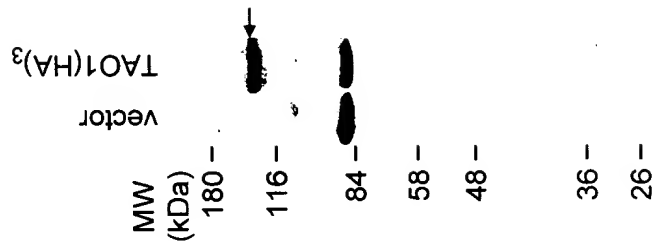


FIG. 5A



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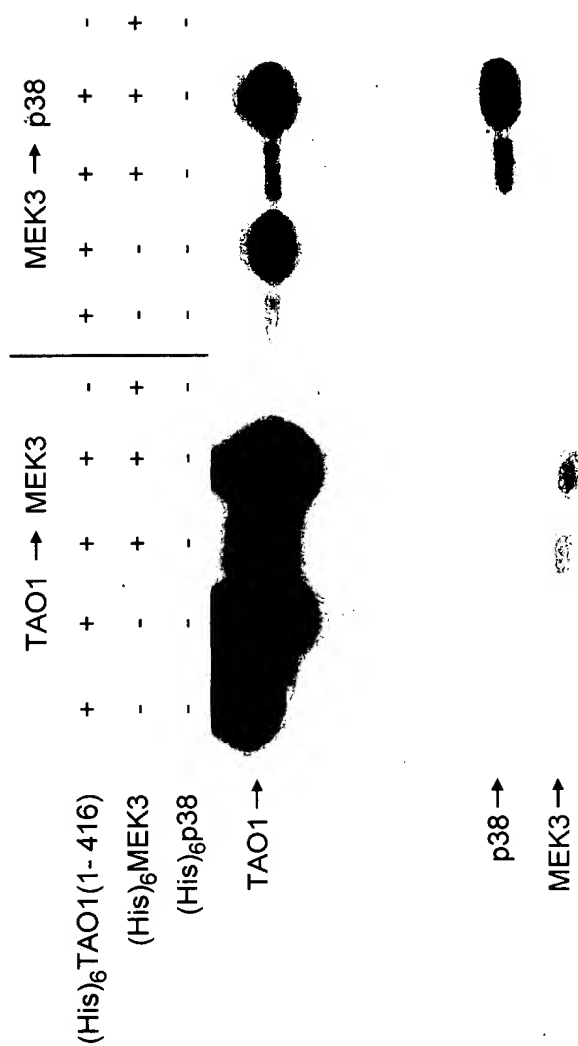


FIG.6



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Inventor(s): Cobb et al.

Title: "TAO Protein Kinase Polypeptides and Methods of Use Therefor"

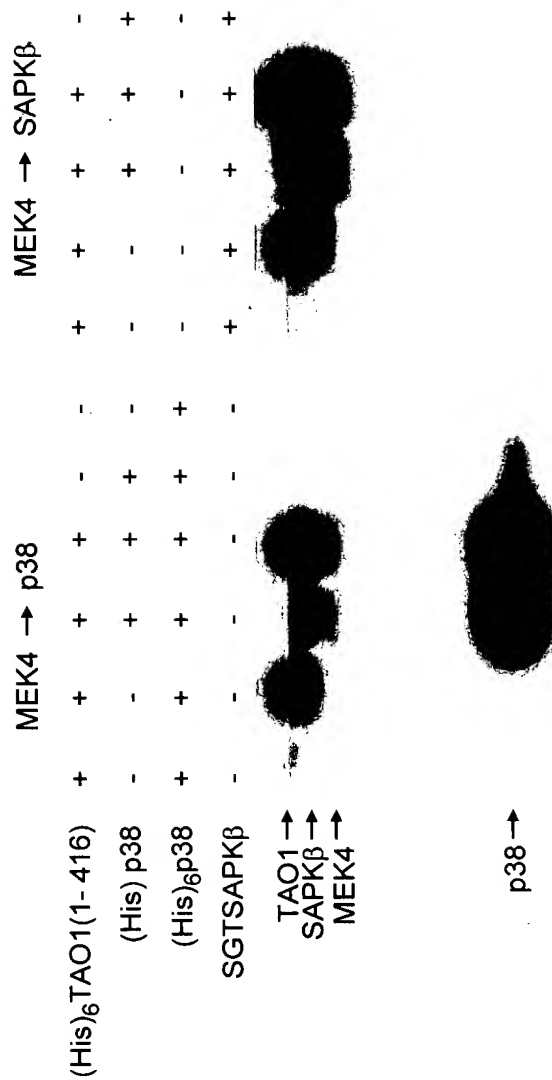


FIG.7



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Inventor(s): Cobb et al.

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	MEK6 → p38			
(His) ₆ TAQ1(1- 416)	+	+	-	-
GSTMEK6	-	+	+	-
(His) ₆ p38	+	+	+	+

TAO1 →



MEK6 →

p38 →



FIG.8



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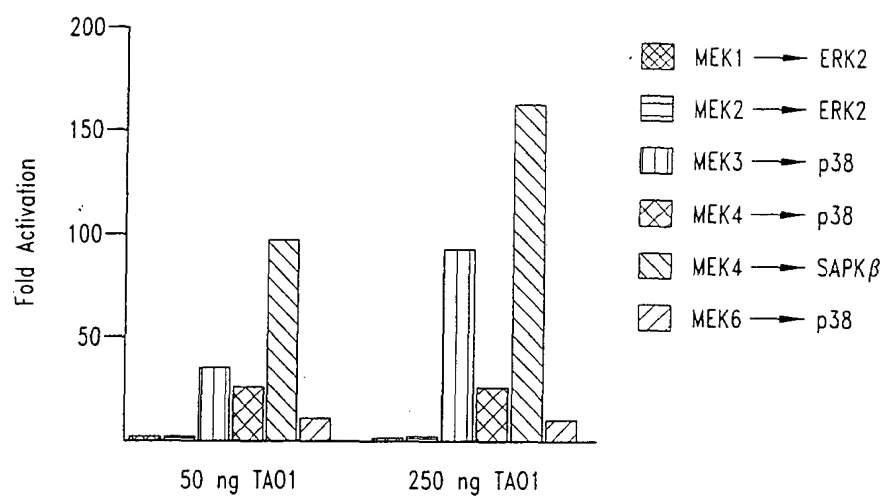


FIG.9



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vector	+	+	-	-
pCMV5TAO1(HA) ₃	-	-	+	+
pCMV5mycMEK3	-	+	+	+



FIG.10



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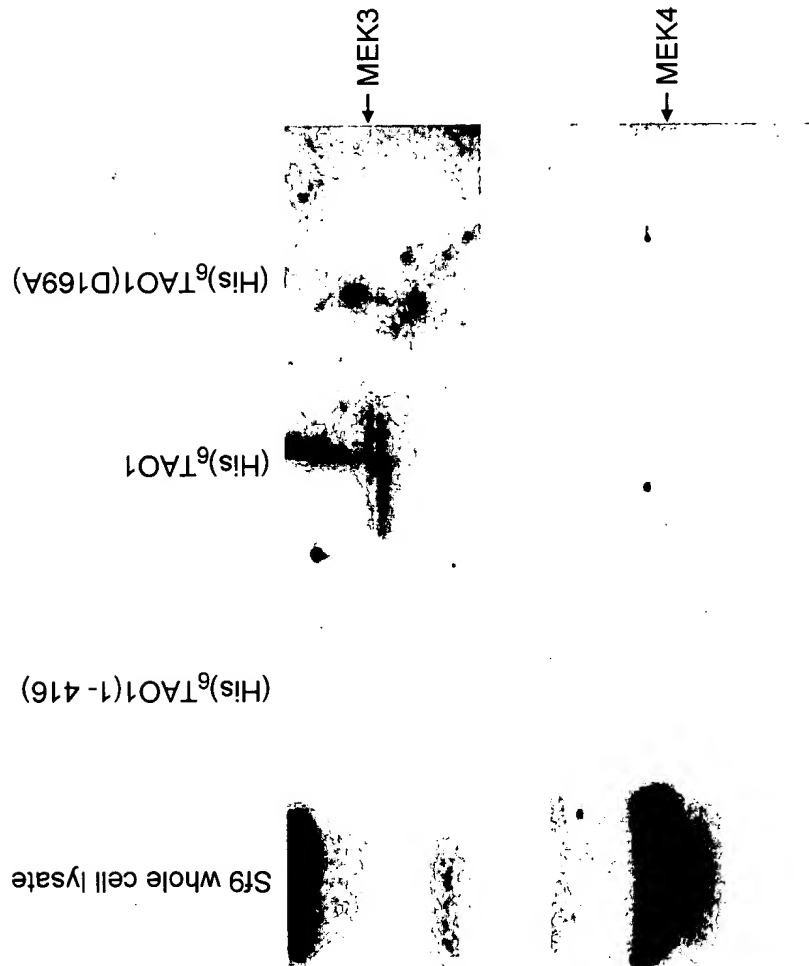


FIG.11

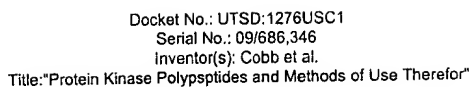


FIG. 12



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Query: 964 GAACAAACATGTGCTTTAAAAGTTCCTCTGATGTAGGGCGATCTTGAGGGATTTTCTGGA 905
      ||||| ||| |||| |||| ||||| || | ||||| ||||| |||
Sbjct: 79 GAACAAAGTCATGCCCTTAATAGTTCTGCTGATGTTGGCCTTTCCTGAGGTATTTCTGCA 138

Query: 904 GGCAAGAATCTACAAAGTTTCGAAAATAATCAGACCATTCATTAGACTGTAGTGTAGGG 845
      ||| |||| |||| | ||| | || ||||| ||||| || |||
Sbjct: 139 AGCAGTAATCAACAAATCTCCTAAAGGAGTCTGTCCATTCATTAGACTGTAACGTTGGG 198

Query: 844 ATTCATTTGGGCTATGTGATATAAGGCACTCATTGCATTCATTAATAAAGGAGGCT 785
      ||||| |||| ||||| ||||| ||||| ||||| ||||| || |||
Sbjct: 199 AGTCATTCTGGCAATGTGATATAAGGCACTCATTGCATTCATGTTGAAAAGGGCGGCT 258

Query: 784 TCCTCTCGGCTAATTCAATACATGTTATTCCAAGAGACCATACATCAACTTGGCCATCAT 725
      ||| || ||||| |||| || ||||| |||| | ||||| |||||
Sbjct: 259 TCCGTTCCGCCAATCAATACAAGTGATGCCAAGTGACCAATATCAACTTCCCATCAT 318

Query: 724 ATTGTCCTTCATCCATGGCTAAAATTACTTCTGGGGCCATCCAATATGGTGTCCACAA 665
      | ||||| ||||| |||| || ||||| ||||| || ||||| |||
Sbjct: 319 ACTGTCCTTCATCCATAGCTAAGATCACCTCTGGAGCCATCCAGTAAGGTGTGCCACGA 378

Query: 664 AAGAATTGGCAGG 651
      || |||| ||
Sbjct: 379 AGGAGTTGGCCAGG 392
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FIG.13

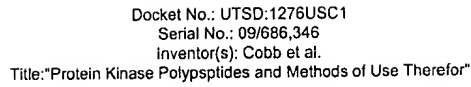


FIG. 14

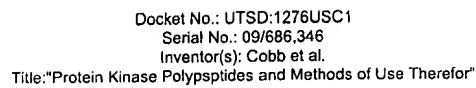


FIG. 15A

FIG. 15B


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Query:   2087 ATGAATCCATGCAAGAAGCTGGAGTTTCGCCACCTCAACACTATTCAAGAAGATGCGCTGTG 2146
          | | | | | | | | | | | | | | | | | | | | | | | | | | | |
Sbjct:   31  ACGAGTCCCCCGAGAGCTAGAGTACAGGCAGCTGCACACGTTACAGAAGCTACGCATGG 90

Query:   2147 AGTTGATCAGACTGCAACATCAAACTGAGCTTACTAACCAGCTGGAATACAATAAGAGAA 2206
          | | | | | | | | | | | | | | | | | | | | | | | | | | | |
Sbjct:   91  ATCTGATCCGTTTACAGACCCAGACGGAAC TGGAAAACCACTGGAGTACAATAAGAGGC 150

Query:   2207  GGAACGGGAAC TAAGACGGAAACATGTCATGGAAGTTCGACAGCAGCCTAAGAGTTGA 2266
          | | | | | | | | | | | | | | | | | | | | | | | | | | | |
Sbjct:   151 GAGAAAGAGAACTGCACAGAAAGCATGTCATGGAAC TCGGCAACAGCAGCAAAAACTTAA 210

Query:   2267  AGTCTAAGAAC TCAAATAAAAAAGCAGTTTCAGGATA 2305
          | | | | | | | | | | | | | | | | | | | | | | | | | | | |
Sbjct:   211 AGGCCATGGAANTGCAATTAAAAAACAGTTCAGGAAA 249

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FIG. 16



Query: 3228 GTGCATATGGTATATTTTATTCGTCTTTGTAAAGCGTTATGTTTTGTGTTTACTAATTGG 3287
|||||
Sbjct: 31 GTGCATATGGTATATTTNATTCATTTTGTAAAGCGTTCGTTTTGTGTTTACTAATTGG 90

Query: 3288 GATGTCATAGTATTTGGCTGCCGGG 3312
|||||
Sbjct: 91 GATGTCATAGTACTTGGCTGCCGGG 115

FIG.17A

Query: 3200 CTCACCTGGGTACTACCGGGTGAAGCTGTGCATATGGTATATTT 3245
|||||
Sbjct: 1 CTCACCTGGGTACTACAGTGTGAAGCTGAGTGCATATGGTATATT 46

FIG.17B

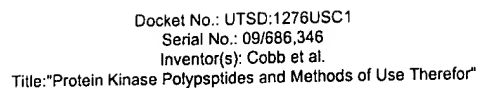
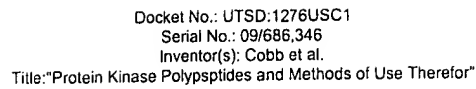


FIG. 18



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Query:   526  CTCAGGGGATTAGCTTATTTACATTCTCATACCATGATCCATAGAGATATCAAAGCAGGA  585
          || || | || | || | || | || | || | || | || | || | || | || |
Sbjct:   449  CTGAAGGCCTGGATTATCTGCACTCAGAGCGCAAGATCCACCGAGATATCAAAGCTGCC  508

Query:   586  AATATCCTTCTGACAGAAACAGGCCAAGTGAACCTGCTGACTTTGGATGCTCTCCA  643
          || | || | || | || | || | || | || | || | || | || | || |
Sbjct:   509  AACGTGCTGCTCTCGGAGCAGGGTGATGTGAAGATGGCAGACTTCGGTGTGGCTGGCA  566

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FIG. 19A

```

Query:   187 GATCCGGAAAAAATCTTCACAGATCTCAGAGAAATCGGCCATGGGAGCTTTGGAGCAGTT 246
          |||||
Sbjct:   119 GACCCAGAGGAACTCTTCACCAAGCTTGACCGCATGGCAAAGGCTCATTTGGGGAGGTG 178

Query:   247 TATTTTGCACGAGATGTGCGTACTAATGAAGTGGTGGCCATCAAGAAAAT 296
          |||||
Sbjct:   179 TACAAGGGGATCGACAACACACCAAGGAAGTGGTGGCCATCAAGATCAT 228

```

FIG. 19B



Query: 866 TCATTAGACTGTAGTGTAGGGGATTCATTTGGGCTATGTGATATAAGGCACTCATTGCA 807
||| | ||| || ||| ||| ||||| ||||| ||| ||| |||
Sbjct: 100 TCAGGATTCTGGAGCTCTGGAGTTCCATTAGTGGCTATCAGATACAATGCCCTGAGTGA 159

Query: 806 TTCATATTAATAAAGGAGGCTTCCTCTCGGCTAATTCATACATGTTATTCCAAGAGAC 747
|| ||||| ||||| ||| | ||| ||||| ||||| ||||| |||||
Sbjct: 160 TTTTCATTAAGGTAAGGGGTTACCTTCCACCATTTCAATTGCCATAATTCCAAGAGAC 219

Query: 786 CATACATCAACTTT 733
|| | ||||| |||
Sbjct: 220 CAGATATCAACTTT 233

FIG.20